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Amargosa Canyon Songbird Project
2015 Least Bell's Vireo and Southwestern Willow Flycatcher Report

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November 2015

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NOTE ON PERMITTING

This report regards permit number TE-807078-16. Permitted personnel include Chris McCreedy and Leonard Warren.

ACKNOWLEDGEMENTS

We thank the Bureau of Land Management Barstow Field Office and the California Department of Fish and Wildlife and its Bishop Field Office for funding and coordinating the project's 2015 field season. We also would like to thank the US Fish & Wildlife Service (Carlsbad, Las Vegas and San Bernardino/Ventura Offices), the Bureau of Land Management (Barstow and Desert District Offices), the Amargosa Conservancy, and the Nature Conservancy for their guidance, use of facilities, and past funding for this long-term study. We gratefully thank Susan Sorrells and Brian Brown for their continued interest in this project, and for access to their property in order to make this project a success.

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SUMMARY

In 2015, Amargosa River study plots at Shoshone and Tecopa (CA) were occupied by eight Bell's Vireo territories (Figure 3). This is an increase by three territories from the five reported in 2014. Of these eight territories, six were on our Shoshone plot. Each of these six Shoshone territories held a nesting female. There were two territories on the Amargosa Canyon plot, and each of these males remained unmated until they departed early during the breeding season. In addition, we monitored an off-plot nesting pair of Bell's Vireos within the town of Shoshone itself.

We located 12 nests for six Shoshone pairs, and these fledged a total of 25 young. Over the last seven seasons, we have observed 25 (2015), 19 (2014), 10 (2013), 16 (2012), 21-22 (2011), 20 (2010) and 18 (2009) Least Bell's Vireo fledges at Shoshone and the northern section of the Amargosa Canyon combined. In addition in 2015, the mated off-plot pair in the town of Shoshone nested twice, producing two fledges.

Funding from the Bureau of Land Management and California Department of Fish and Wildlife also enabled us to continue Brown-headed Cowbird trapping and removal in 2015. No Bell's Vireo nests were lost to cowbirds in 2008-2009 and 2011-2015. Two Bell's Vireo nests were lost to cowbird activity in 2010, the year in which we were unable to trap cowbirds for lack of funding.

Though we detected several Willow Flycatchers on their spring migrations, we did not observe a Willow Flycatcher to hold a territory on the Amargosa River in 2015.

INTRODUCTION

Riparian habitats cover only a small percentage of California (<0.5%), yet they may be the most important habitat for land bird species in the state (Riparian Habitat Joint Venture 2004). Desert riparian habitats are by definition isolated and rare, and they face multiple threats. These threats include exotic plant invasions, increased fire frequency, domesticated and feral livestock overgrazing, groundwater pumping, and outright loss to urbanization. Only 2 – 15% of California's original desert riparian still exists, and much of California's remaining riparian habitat is fragmented and degraded (RHJV 2004). As desert riparian habitats decrease in extent, it is critical to provide their land managers decision support tools through monitoring efforts such as this project.

In 2005, PRBO Conservation Science initiated the Amargosa Canyon Songbird Project in collaboration with the Bureau of Land Management's Barstow Field Office and United States Fish and Wildlife Service's Ventura Office. The project began as an effort to locate breeding territories and nests of federally endangered Southwestern Willow Flycatchers and Least Bell's Vireos in advance of *Tamarix* removal. *"Tamarix"* includes members of the *T. ramocissima* X *chinensis* complex and *Tamarix aphylla*, and its removal has occurred on BLM, California Department of Fish and Wildlife, and private landholdings on the Amargosa River and its tributary, Willow Creek (USFWS 2005).

1 METHODS

1.1 Study Design

We initiated 32.7 ha plot at the north end of the Amargosa Canyon (AMNO) as well as a 31.8 hectare plot near Shoshone (SHOS) in 2006 (Figures 1a - 6). Though the SHOS and AMNO plots each once contained significant amounts of *Tamarix*, they are now generally dominated by native vegetation post *Tamarix*-removal. *Tamarix* removal has only occurred sporadically on AMSO, which is still dominated by *Tamarix*.

The AMNO plot was entirely burned in an arson-caused fire in 2002, and it is in regeneration. Much of the AMNO plot again burned in 2010, due to another fire. The southern boundary of the AMNO plot matches the 2002 burn's southern extent. The AMNO plot is dominated by *Salix exigua* and isolated, recovering clones of *Salix gooddingii*. By early 2010, these *S. gooddingii* had recovered to reach over 5 m in height, but most were then lost again to fire after the 2010 breeding season.

In addition to willows, upland and transition areas of the AMNO plot hold large patches of dense *Atriplex lentiformis*, *Pluchea sericea*, and *Phragmites australis*, with isolated pockets of *Prosopis glandulosa* and *Prosopis pubescens*. Some of these *Prosopis* patches are tucked into rocky areas that escaped the 2002 burn. The wettest reaches of the AMNO plot are choked with *Typha* and *Schoenoplectus maritimus*. Both native and exotic vegetation have recovered rapidly after the fire, and BLM crews removed *Tamarix* re-growth across the southern half of the plot in the winter of 2006. We have monitored the AMNO plot for all species each season, beginning in 2005.

The SHOS plot is approximately 20 miles upstream of Amargosa Canyon, near the town of Shoshone. The SHOS plot was initiated in 2006, prior to *Tamarix* removal. It is more xeric than the Amargosa Canyon plots, and prior to *Tamarix* eradication, the SHOS plot is dominated by *P. pubsescens, P. glandulosa*, *A. lentiformis*, and *Tamarix*. In addition, the SHOS plot also holds isolated groves of *Tamarix aphylla* that reach approximately 10 m in height. Nearly all of this *Tamarix* cover was removed by the BLM prior to the 2007 field season, and the BLM and other groups have returned to the SHOS plot to control *Tamarix* regeneration after the 2007 field season. We have monitored the SHOS plot for all species since 2006.

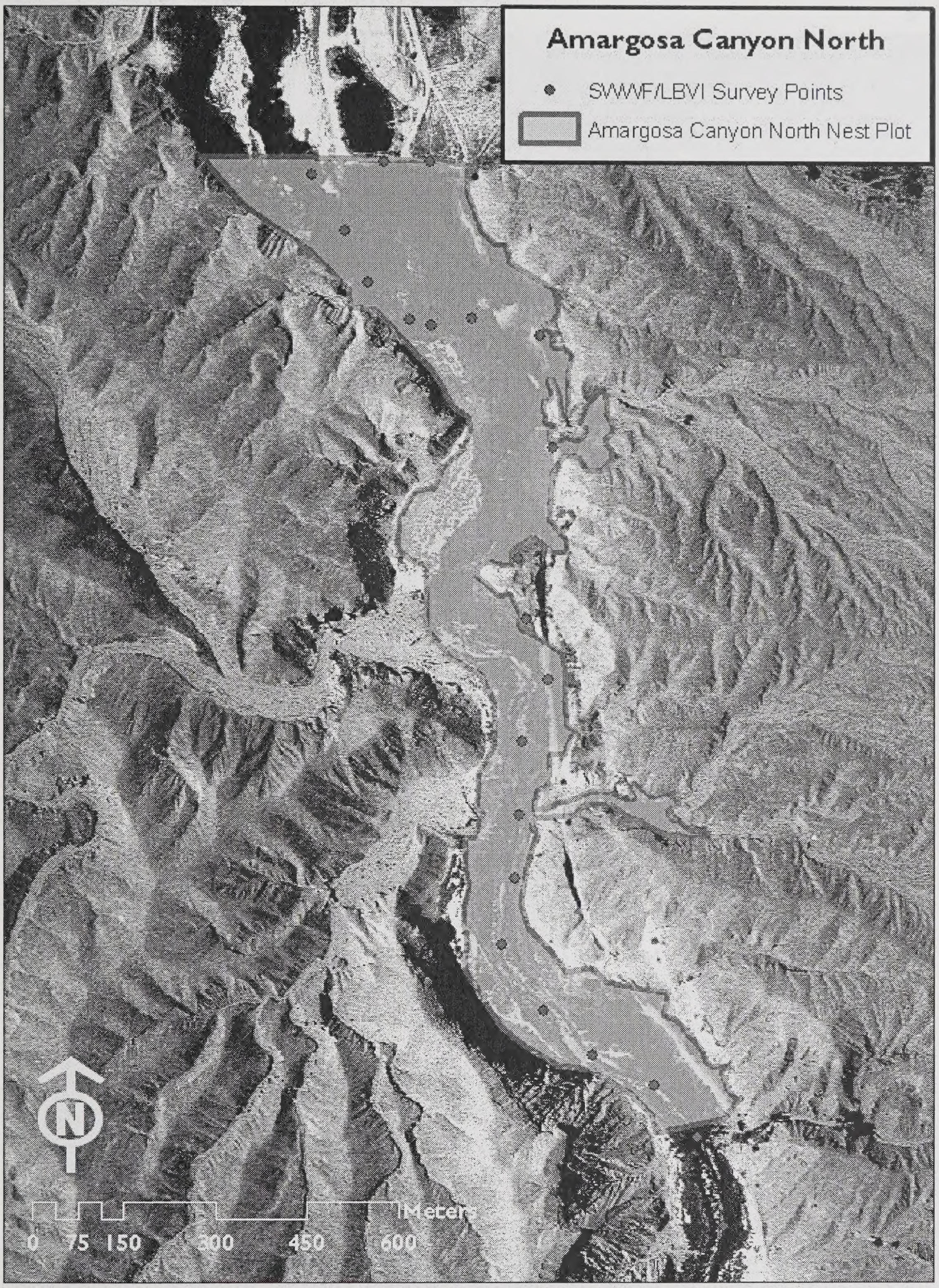

Figure 1a. Amargosa North (AMNO) nest plot, with Southwestern Willow Flycatcher and Least Bell's Vireo playback survey points. Monitored 2005-2015.

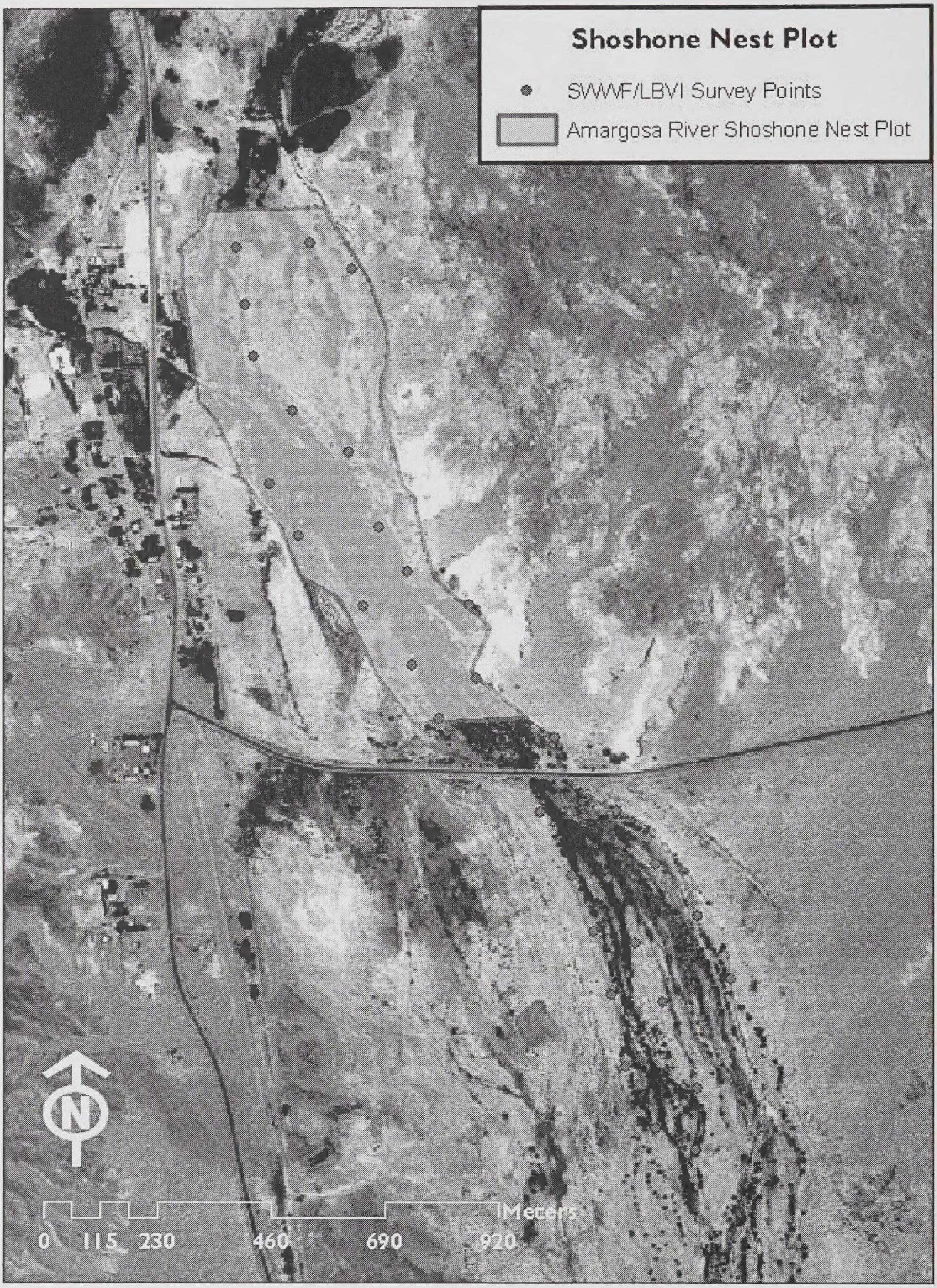
Shoshone Nest Plot
● SWWF/LBVI Survey Points
▨ Amargosa River Shoshone Nest Plot
N
0
115
230
460
690
920
Meters

Figure 1b. Shoshone (SHOS) nest plot, with Southwestern Willow Flycatcher and Least Bell's Vireo playback survey points. Monitored 2006-2015.

1.2 Territory Mapping.

Using UTM-gridded maps and GPS Garmin receivers, we mapped territorial behaviors and nests for all species present on each plot for three to four days each week, April 1 – July 31. We followed guidelines suggested in International Bird Census Committee recommendations (IBCC 1970) and Ralph et al. (1993). At the end of the season, we compiled daily spot maps to create territory maps for each breeding species. Territory numbers were summarized following Hall (1964). We summarized non-territorial species (e.g. Mourning Doves, House Finches) by number of detected nesting females.

1.3 Nest Finding and Monitoring and Nest Vegetation Measurements

We located nests on each plot, which we then monitored at least once every 4-8 days (Bell's Vireos were monitored less frequently due to their sensitive status), following protocols described in Martin and Geupel (1993), Martin et al. (1997), and Rourke (1999). We recorded nest contents and Brown-headed Cowbird parasitism on each visit to the nest until the nest's subsequent fledge or failure. After nesting was complete, we conducted 5 m-radius and 11.3 m-radius vegetation assessments about each nest following Martin et al. (1997). Using the same protocol, we conducted thirty non-nest vegetation assessments at randomly-generated locations on each plot each season.

Nest and non-nest assessments included absolute cover estimates of shrub cover, non-woody cover, and groundcover. Groundcover was broken into "litter", "bare ground", and "rock". We estimated relative covers (by species) of absolute shrub and non-woody cover, and we multiplied these relative species covers by absolute shrub and non-woody cover to give by-species absolute cover estimates for analysis. Numbers of "tree" stems (stems 5 m in height and over 8 cm in diameter at breast height (DBH)) were recorded by DBH size categories in 11.3 m-radius plots around each nest and non-nest point. Canopy measurements included: "canopy height", the maximum height of the canopy above the nest, and "canopy cover", the percent of the 11.3 m-radius plot covered by vegetation greater than 5 meters in height.

1.4 Endangered Species Surveys

In its *Biological Opinion for the Saltcedar Removal and Riparian Restoration Project within the Amargosa River Drainage* (2005), the USFWS asserted that the BLM should survey for federally-endangered Southwestern Willow Flycatchers (*Empidonax traillii extimus*) and Least Bell's Vireos (*Vireo bellii pusillus*), to minimize potential take during *Tamarix* eradication efforts (29).

We followed all Southwestern Willow Flycatcher and Least Bell's Vireo survey techniques and schedules outlined in Attachments A and B of the USFWS *Biological Opinion* (USFWS 2005), Sogge (2000 and 1997) and Rourke et al. (1999) in order to locate, map, find and monitor nests, and to establish buffers for these species in advance of *Tamarix* eradication. In addition, our constant spot-mapping effort on the SHOS, AMNO, and plots enabled us to detect additional Bell's Vireos and Willow

Flycatchers not detected during presence/absence surveys. Spot-mapping and nest-monitoring methodologies are found above in Section 1.3.

Survey point locations are provided in Figures 1a-1b. All points in the Amargosa Canyon were surveyed in 2005-2015. Points near Shoshone were surveyed in 2006-2015.

1.5 Brown-headed Cowbird Trapping

We conducted Brown-headed Cowbird trapping following methods described in McLeod et al. (2007). We used eight funnel-shaped Brown-headed Cowbird traps built by SWCA Consultants (the authors of the McLeod et al. report).

Trap locations are depicted in Figures 2a-c. We placed two traps on the SHOS plot, and one trap on the AMNO plot. In addition, we placed two traps at nearby China Ranch, where the densest population of Bell's Vireos in the project area exists. We also placed one trap north of the AMNO plot in Tecopa, near a horse corral where we found Brown-headed Cowbirds gathering in 2005 and 2006. We also placed a cowbird trap at the Crowbar Café in Shoshone, another location where cowbirds frequently gather and feed.

We checked traps at least once every 24 hours, and we replenished them with water and seed regularly. We noted all new and existing cowbird captures during each trap check, and we recorded and released all non-target captures. At the direction of the FWS we only euthanized female cowbirds. We immediately released juveniles, and we kept males in traps as decoys. We clipped adults' wings to prevent injury while being used as decoys, and males were cycled out of the traps if they had been used as a decoy for more than approximately seven to ten days.

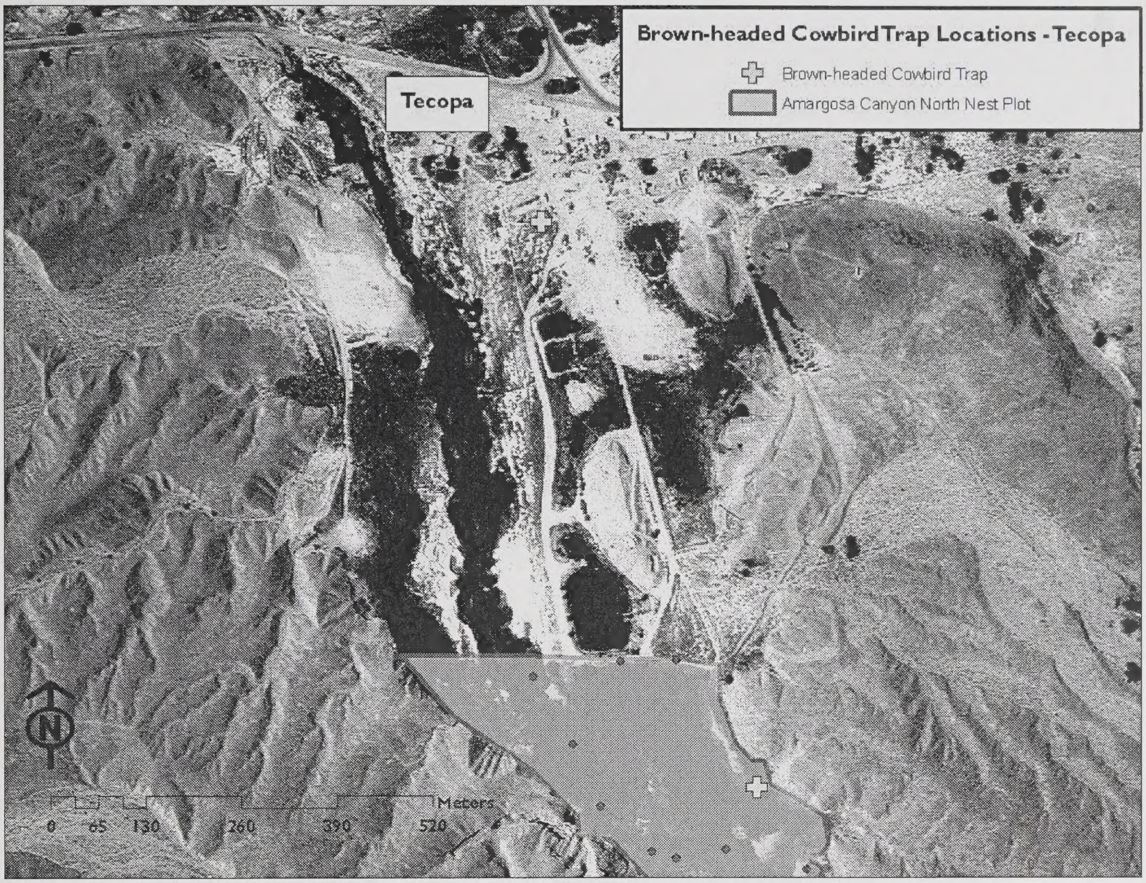
Brown-headed Cowbird Trap Locations - Tecopa
Brown-headed Cowbird Trap
Amargosa Canyon North Nest Plot
Tecopa
N
Meters
0
65
130
260
390
520

Figure 2a. Two Brown-headed Cowbird trap locations near the Amargosa River at Tecopa, CA. The Amargosa North (AMNO) nest plot is shaded blue.

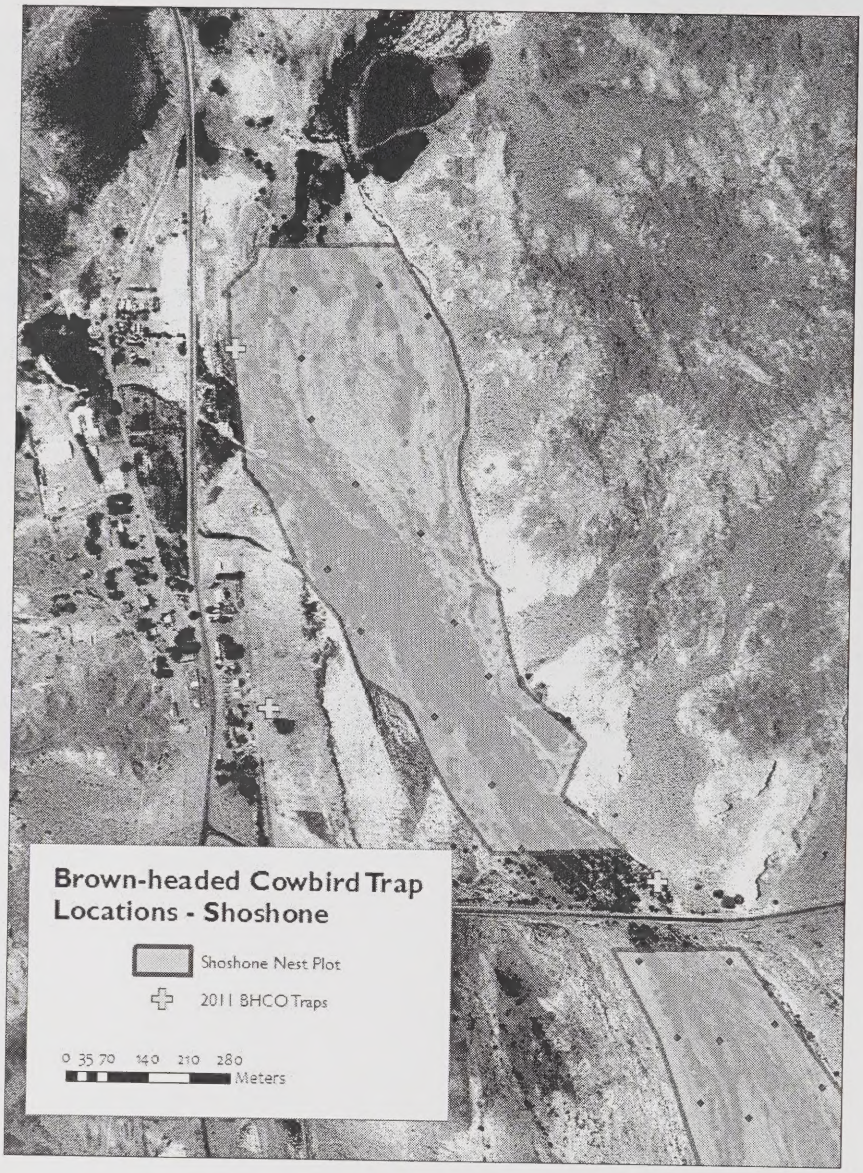

Figure 2b. Three Brown-headed Cowbird trap locations near the Amargosa River at Shoshone, CA. The Shoshone (SHOS) nest plot is shaded purple.

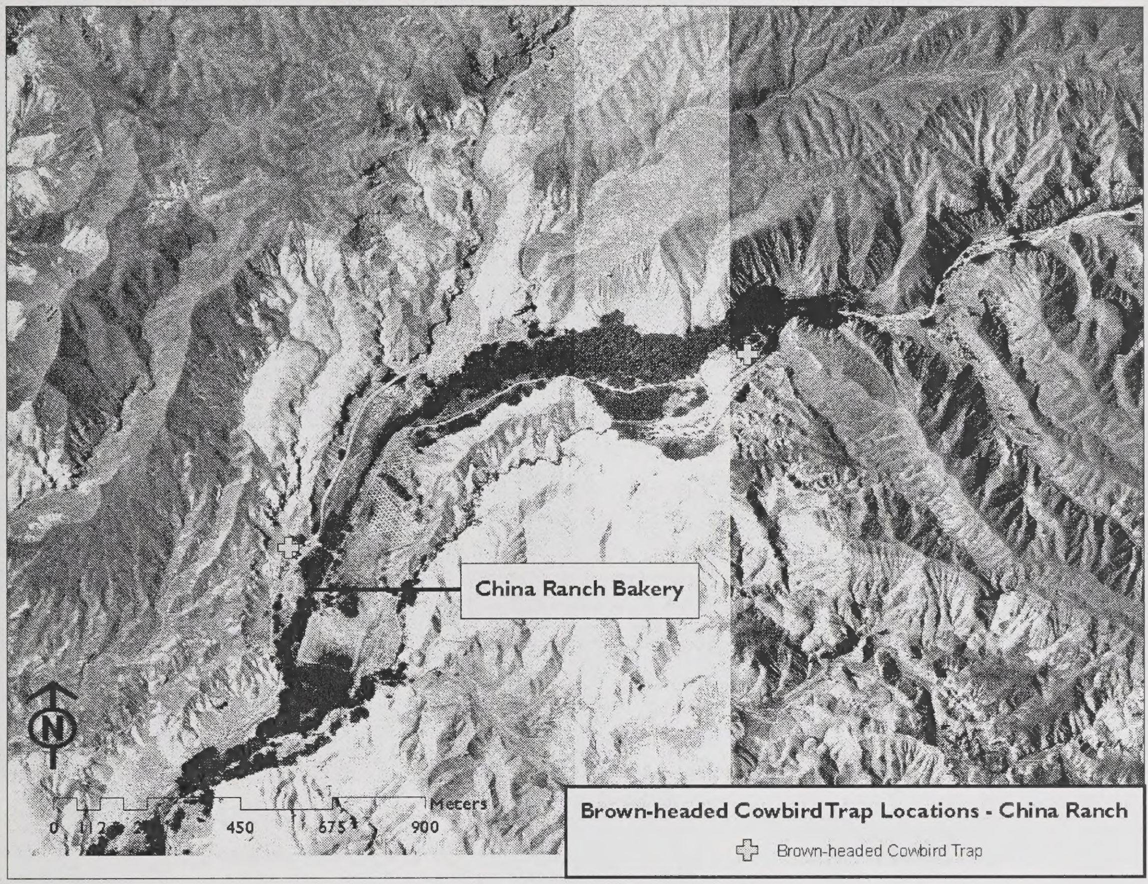
China Ranch Bakery
N
0
112
2
450
675
900
Meters
Brown-headed Cowbird Trap Locations - China Ranch
Brown-headed Cowbird Trap

Figure 2c. Two Brown-headed Cowbird trap locations at China Ranch on Willow Creek, a tributary of the Amargosa River.

2 RESULTS

2.1 Bell's Vireos

We detected eight territorial male Bell's Vireos in 2015. Six paired males were on the SHOS plot. Two unmated males were found on the AMNO plot into May, and one of these males built a partially-constructed advertising nest. One off-plot pair was found and monitored in the town of Shoshone. Figure 3 shows territory and nest locations. Table 1 lists nest outcomes.

Table 1. Bell's Vireo nest locations and outcomes, 2015. Coordinates in NAD83 Zone 11.

Territory	Date Found	utme	utmn	Substrate	Result
Shoshone 1	4 April	566174	3981586	Honey Mesquite	Fledged 4
	29 May	566111	3981531	Screwbean Mesquite	Fledged 4
Shoshone 2	4 April	565972	3981685	Honey Mesquite	Fledged 4
	29 May	566025	3981658	Screwbean Mesquite	Three eggs fail to hatch
Shoshone 3	7 April	566013	3982305	Screwbean Mesquite	Fledged 2
	6 June	566010	3982332	Quailbush	Fledged 4
Shoshone 4	8 April	566343	3981245	Baccharis sp.	Fledged 2
	9 June	566405	3981186	Honey Mesquite	Three eggs depredated
Shoshone 5	9 April	566197	3981339	Honey Mesquite	Fledged 2
	6 June	566217	3981365	Honey Mesquite	Four eggs depredated
Shoshone 6	10 April	566310	3981387	Honey Mesquite	Four young depredated
	28 May	566252	3981334	Screwbean Mesquite	Fledged 3
Shoshone 7	1 May	565562	3981992	Honey Mesquite	Fledged 2
(off plot)	30 June	565493	3981984	Honey Mesquite	Three eggs fail to hatch

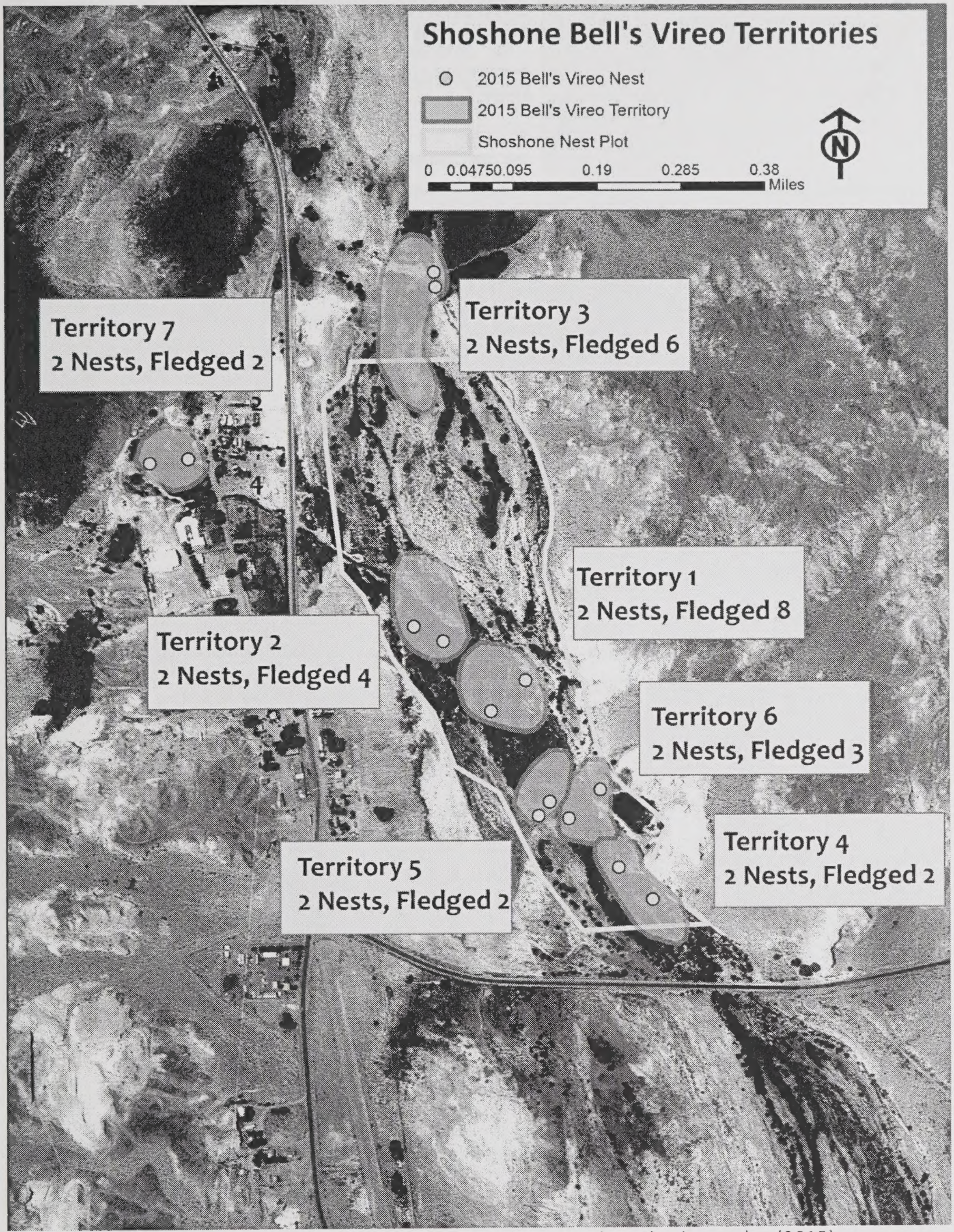

Figure 3a. Bell's Vireo territory locations and nests, photo overlay, Shoshone plot (2015).

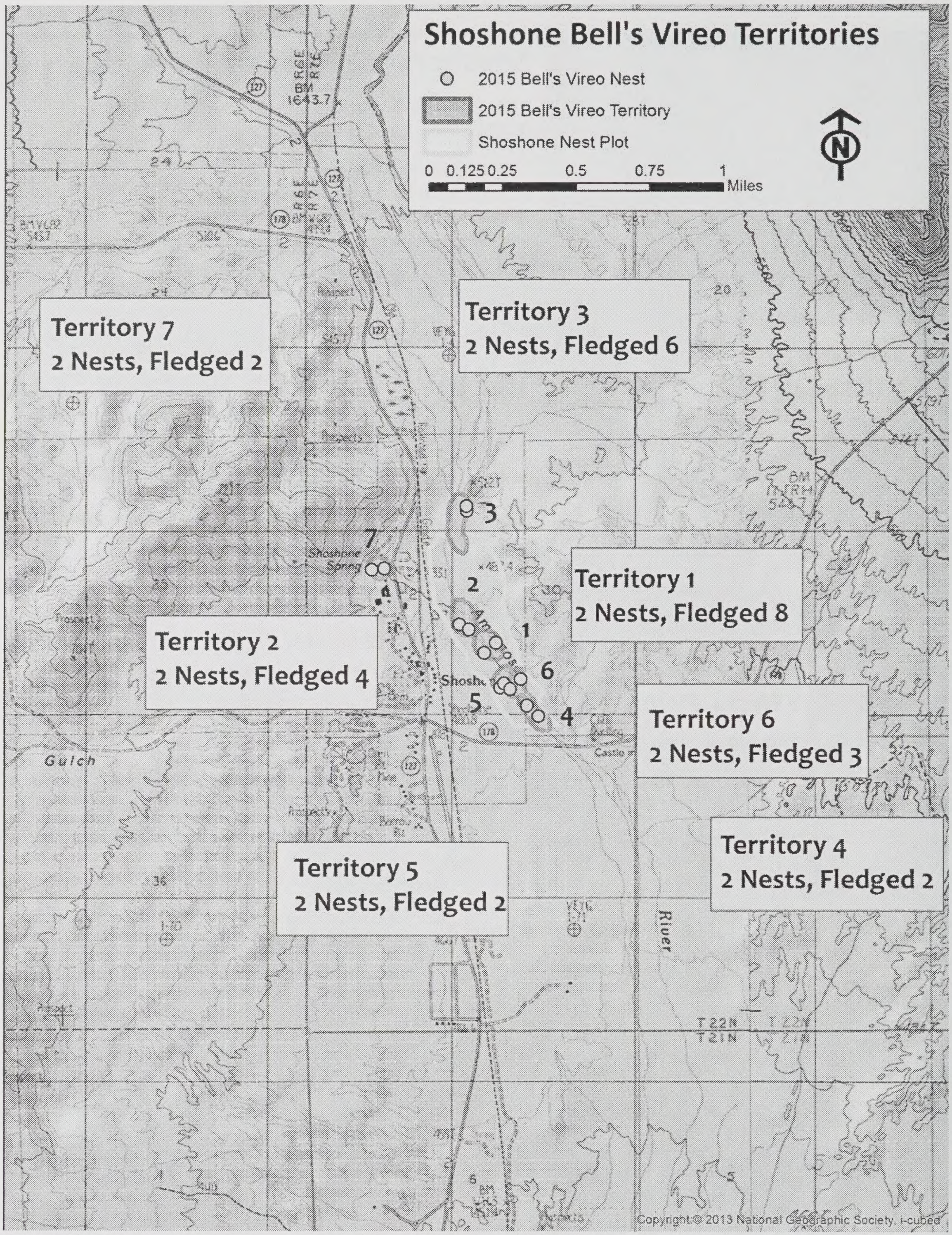

Figure 3b. Bell's Vireo territory locations and nests, 1:24,000 USGS overlay, Shoshone plot (2015). Shoshone, CA quadrangle.

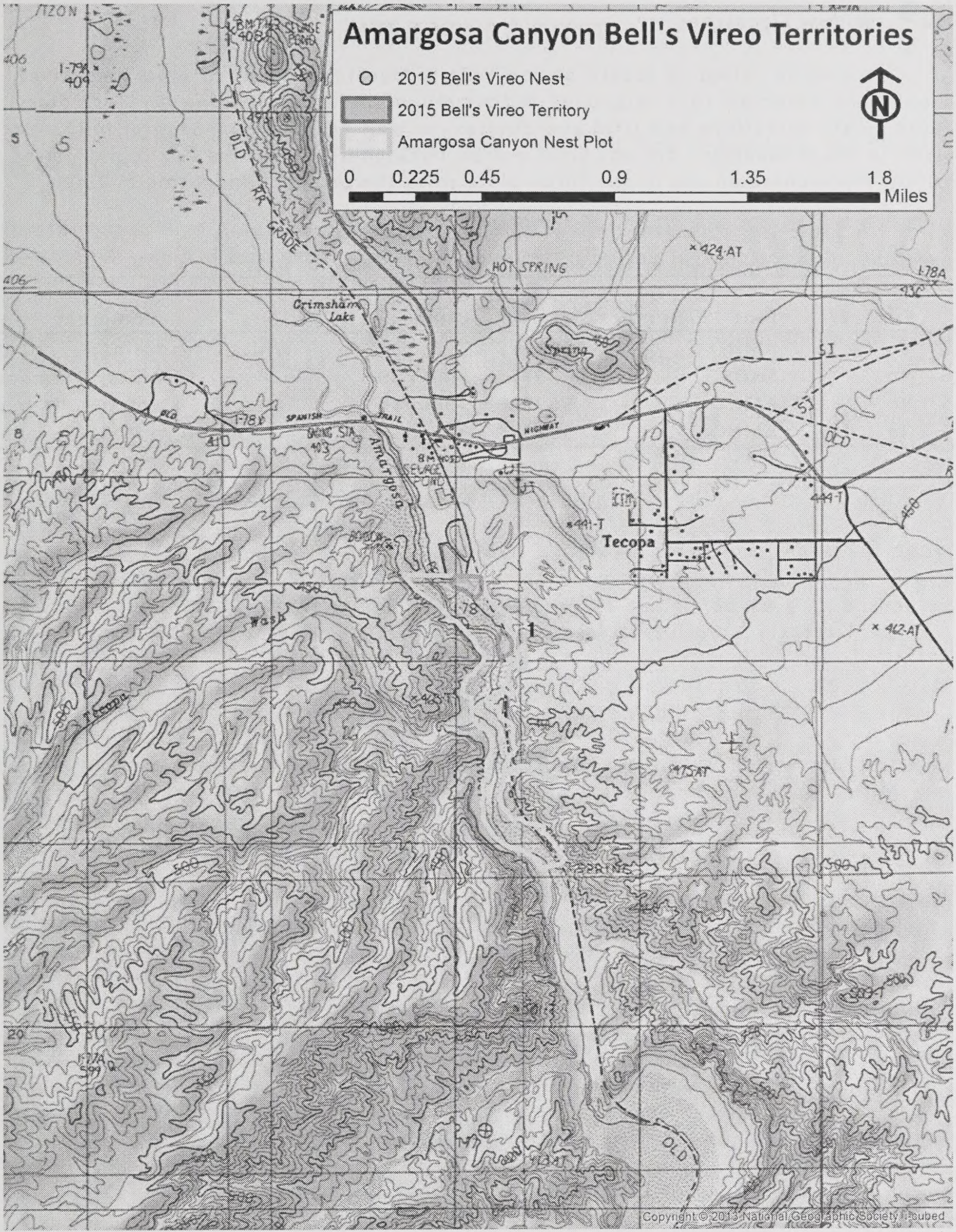
Amargosa Canyon Bell's Vireo Territories
○ 2015 Bell's Vireo Nest
▨ 2015 Bell's Vireo Territory
☐ Amargosa Canyon Nest Plot
0 0.225 0.45 0.9 1.35 1.8
Miles
N
HOT SPRING
Grimshaw Lake
SPANISH TRAIL
HIGHWAY
Amargosa
Tecopa
Wash
SPRING
OLD
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Figure 3c. Bell's Vireo territory locations and nests, 1:24,000 USGS overlay, AMNO plot (2015). Neither male was mated. Tecopa, CA quadrangle.

2.2 Willow Flycatcher

We again failed to locate paired Willow Flycatchers on the Amargosa River, though we detected four migrating individuals while spot-mapping on nest plots. Table 2 lists detections and UTM coordinates, as well as behavior. Several follow-up visits to these locations did not yield paired flycatchers. We have not found paired Willow Flycatchers on any of our three plots since the project's inception in 2005.

Table 2. All Willow Flycatcher detections on the Amargosa River, Inyo County, CA in 2013.

Date	Scheduled Survey?	Plot	Number	utme	utmn	Comment
5/15/2015	No	AMNO	1	565929	3966588	Whits all morning, 25-30 Fitzbews
5/16/2015	No	SHOS	1	566375	3981249	30-40 whits, 3 Fitzbews
5/18/2015	No	AMNO	1	569939	3966663	40-50 whits, 4 Fitzbews
5/26/2015	No	AMNO	1	569970	3966584	40-50 whits, 10 Fitzbews

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SOGGE, M.K., MARSHALL, R.M., SFERRA, S.J., TIBBITTS, T.J. 1997. A Southwestern Willow Flycatcher natural history summary and survey protocol. Technical Report NPS/NAUCPRS/NRTR-97/12. United States Geological Survey Colorado Plateau Research Station, Northern Arizona University. Flagstaff, AZ.

USFWS (UNITED STATES FISH AND WILDLIFE SERVICE). 2005. Biological Opinion for the Saltcedar Removal and Riparian Restoration Project within the Amargosa River Drainage. Ventura Fish and Wildlife Office, 2493 Portola Road, Ventura, CA 93003.

APPENDIX

This appendix is a summary of report figures provided with USGS topo underlays at 1:24,000 scale, per request of the USFWS. They correspond to preceding figures in the report.

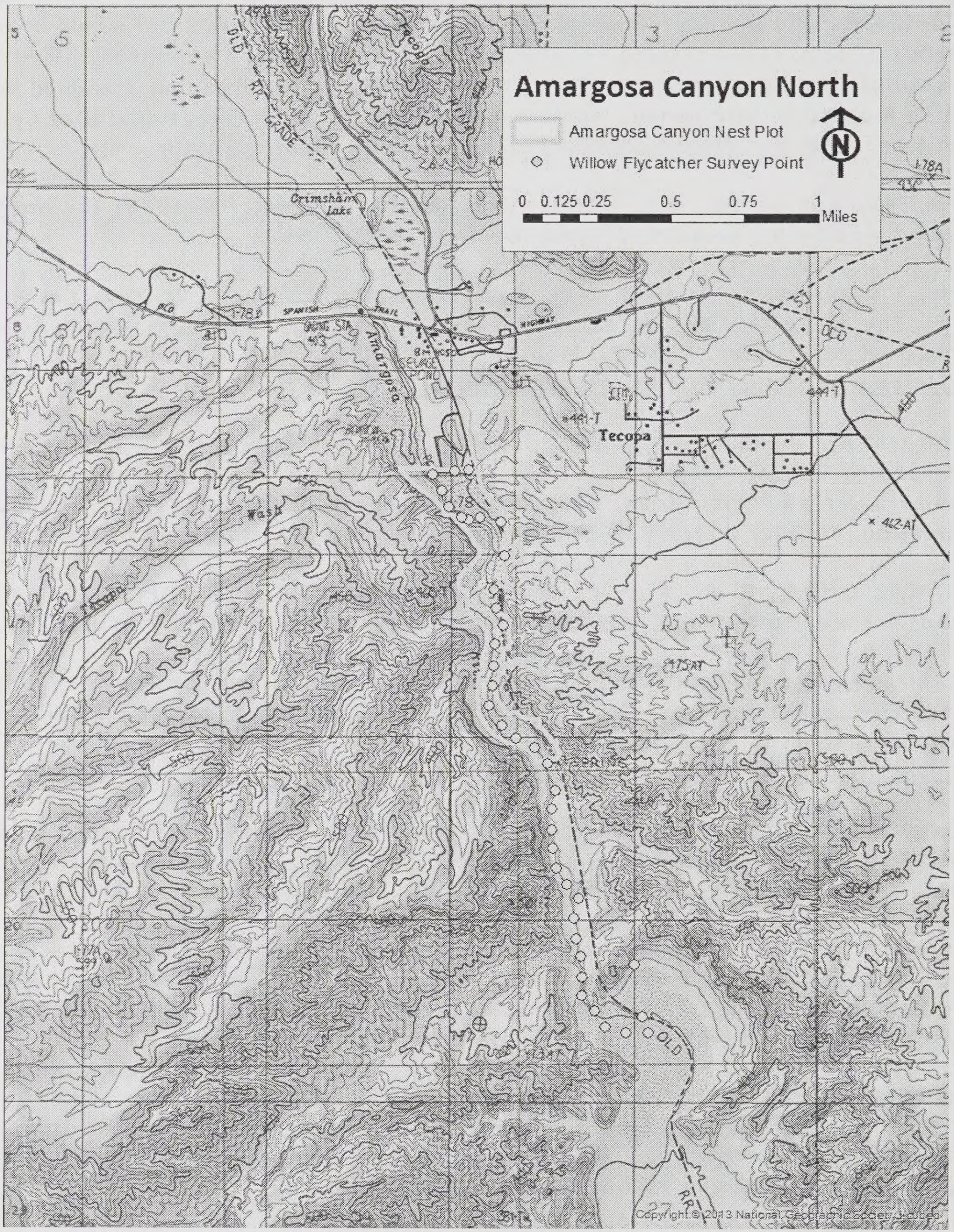
Amargosa Canyon North
Amargosa Canyon Nest Plot
Willow Flycatcher Survey Point
N
0 0.125 0.25 0.5 0.75 1
Miles
Grimshaw Lake
Amargosa
Tecopa
Wash
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Figure A1a. Amargosa North (AMNO) nest plot, with Southwestern Willow Flycatcher and Least Bell's Vireo playback survey points. Tecopa Quadrangle. Monitored 2005-2015.

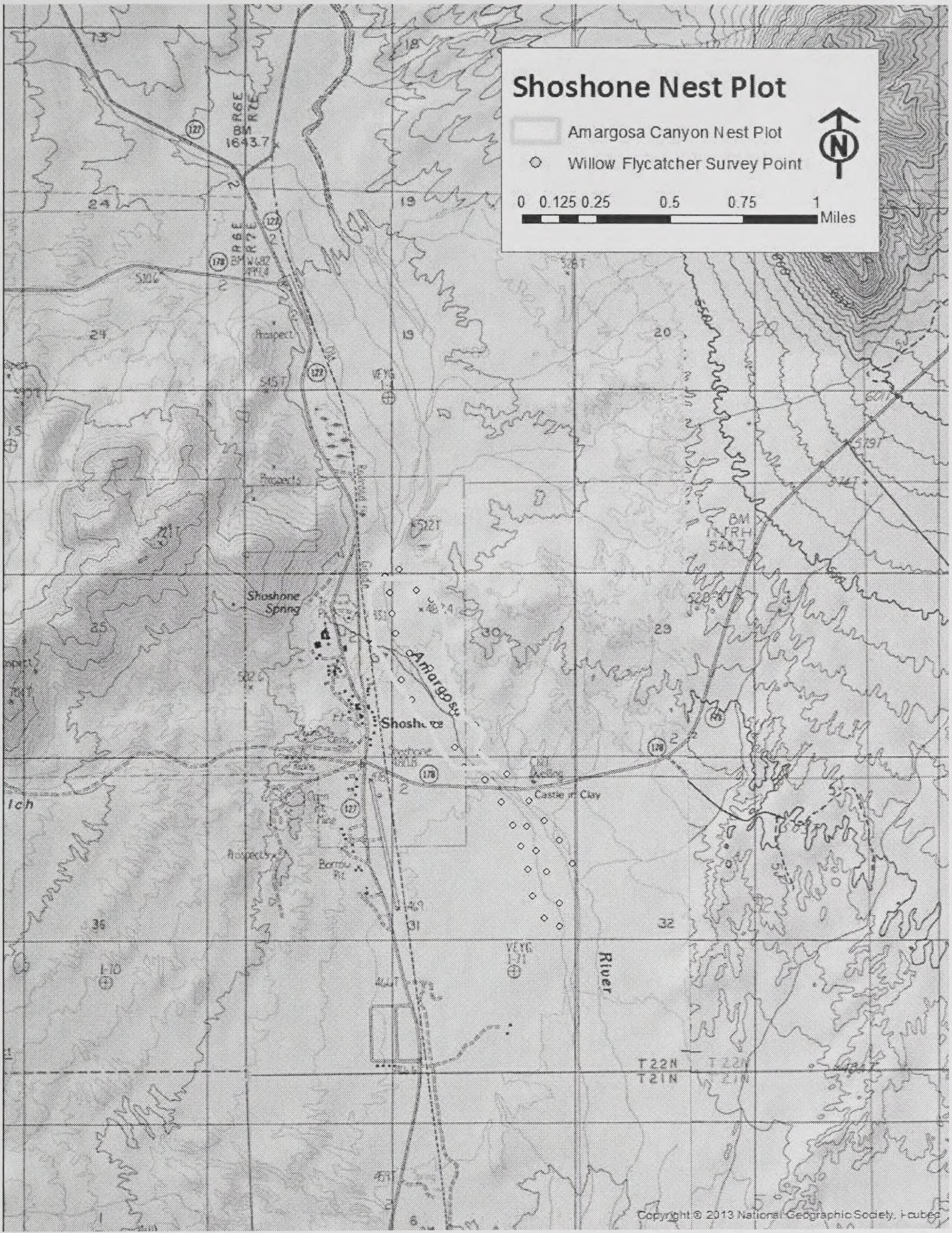

Figure A1b. Amargosa Shoshone (SHOS) nest plot, with Southwestern Willow Flycatcher and Least Bell's Vireo playback survey points. Shoshone Quadrangle. Monitored 2006-2015.

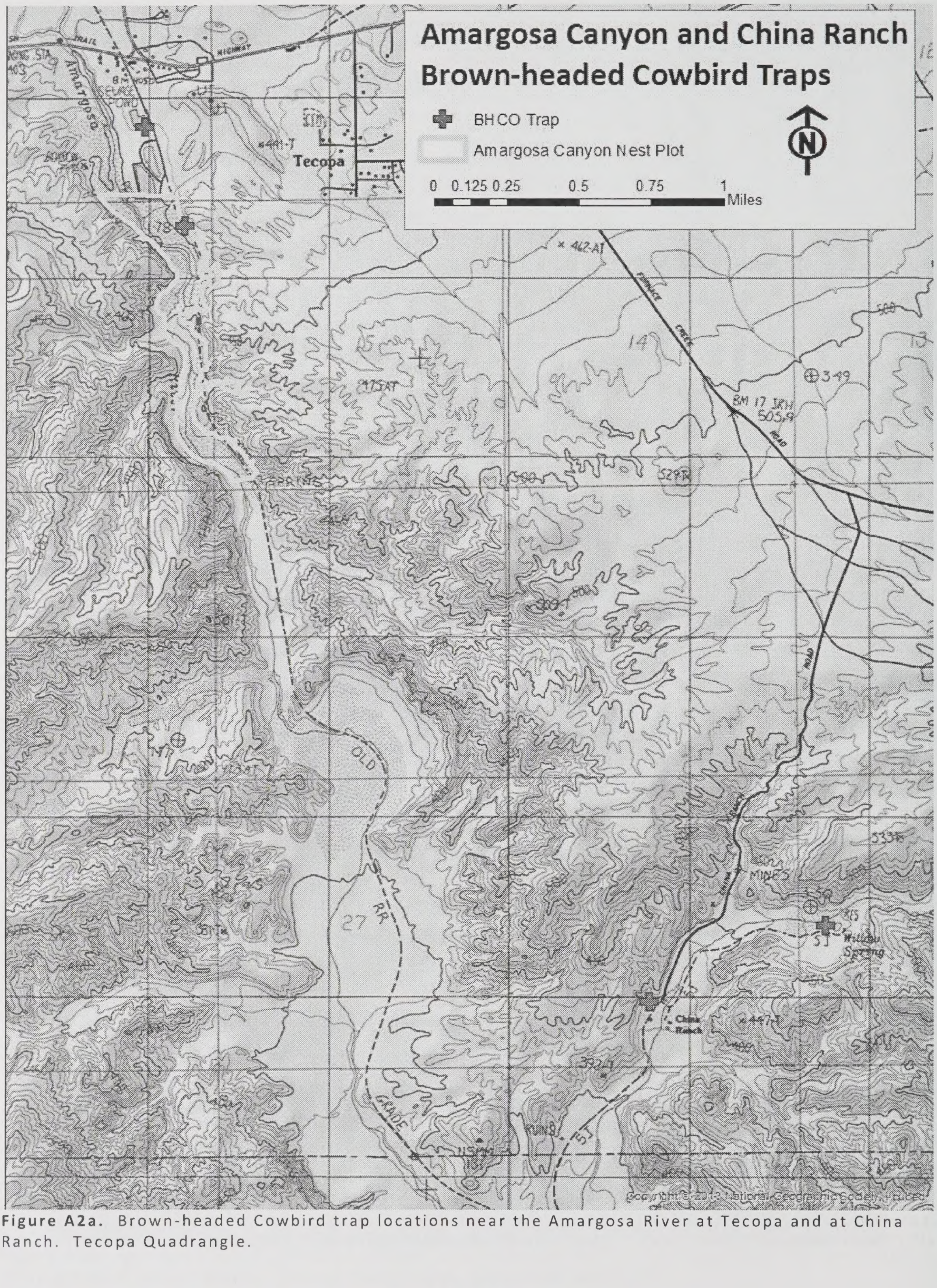
Amargosa Canyon and China Ranch Brown-headed Cowbird Traps
BHCO Trap
Amargosa Canyon Nest Plot
N
0
0.125
0.25
0.5
0.75
1
Miles
Amargosa
Tecopa
FURNACE CREEK
ROAD
BM 17 JRH 505.9
SPRING
OLD
RR
GRADE
27
MINES
Willow Spring
China Ranch
RUINS
Copyright:© 2013 National Geographic Society, i-cubed

Figure A2a. Brown-headed Cowbird trap locations near the Amargosa River at Tecopa and at China Ranch. Tecopa Quadrangle.

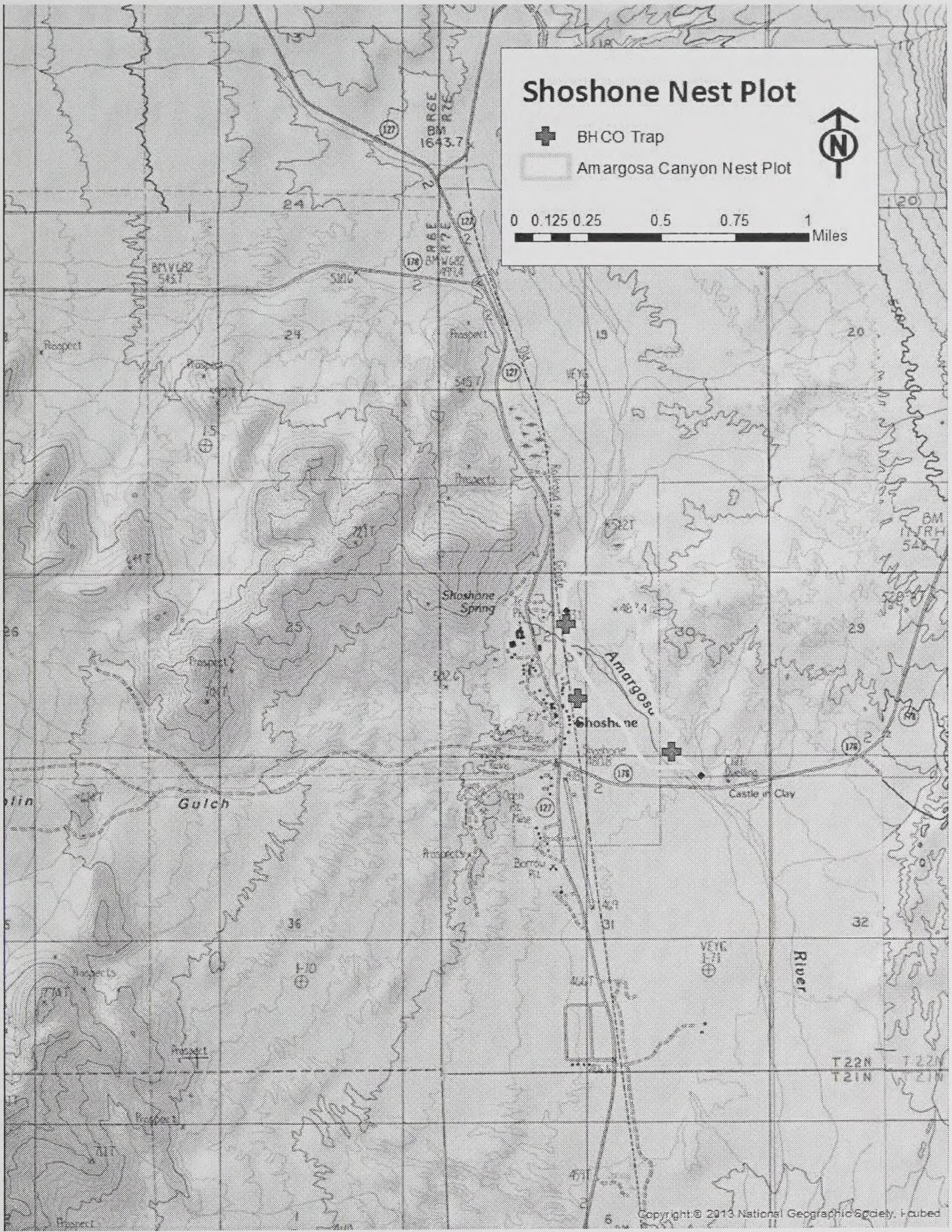

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Figure A2b. Brown-headed Cowbird trap locations near the Amargosa River at Shoshone. Shoshone Quadrangle.